

EVALUATING THE QUALITY OF A CONTACT PLUG FILL

Abstract of the Disclosure

Defective contact plug fills can be detected by applying an etching solution, which in some embodiments preferentially etches in the $\langle 111 \rangle$ direction. The etching solution in some embodiments may also produce a characteristic type of undercutting underneath the contact plug fill. Contact plug fills with defects in them have undercutting underneath as a result of the etchant exposure, while defective contact plug fills have no such undercutting. The contact plug fills that are now undercut by etching exposure are unable to dissipate surface charge or surface applied potential and can be detected using voltage contrast methods or conventional electrical testing techniques, for example.